GEOGRAPHIC SCHOOL BULLETINS

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B. Anthony Stewart

VITAMINS GROW ON TREES IN THE CITRUS GROVE

The modern science of nutrition explains that sailors on long voyages, unable to obtain fresh food, suffered from scurvy because they lacked vitamin C. The citrus fruits, such as these Texas grapefruit (above), and tomatoes and other fresh vegetables are recommended for vitamin C. As an aid to efficiency during America's war effort, Mr. and Mrs. Citizen and their children are learning to seek the required amount of vitamins among the 100,000 pounds of food each one eats in an average lifetime (Bulletin No. 3).

HOW TEACHERS MAY OBTAIN THE BULLETINS

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General Headquarters, Washington, D. C.

French Northwest Africa Approaches Size of U.S.

ANY administrative change in France's Vichy government, such as the return to power of Pierre Laval, immediately attracts American attention to French colonial possessions in Africa. French resources of man power, materials, and bases of operation—particularly Dakar—in the westward bulge of the African continent have special interest for both North and South Americans because of their possible influence in the air and naval warfare of the Atlantic.

In North Africa and West Africa, French territory covers by far the major portion of Africa's great shoulder outthrust into the Atlantic to a point within about 1,860 statute miles of South America. Morocco, Algeria, Tunisia (illustration, next page), and French West Africa together have an area of more than 2,800,000 square miles, or almost that of continental United States.

Dakar Is Africa's Key to the South Atlantic

Apex of these vast French territories is the port of Dakar, with its spacious harbor and its big airport of Oukam. This city of 105,000 inhabitants, some 15,000 of them white, dominates Africa's westernmost wingtip; it is only about 1,860 miles across the South Atlantic from Brazil, and about the same distance south of the continent of Europe. It has one of the three best harbors on Africa's Atlantic coast, and the other two are British-ruled. Strategists point out that any Axis attack on South America would be possible only with Dakar as a base. As a base the port is important also because it overlooks Atlantic sea lanes along which travel many of Great Britain's economic and military necessities.

Throughout the extensive French possessions for which Dakar is the Atlantic doorsill, over 30,000,000 people form a considerable reservoir of man power.

During the first World War, the well-trained and picturesquely dressed native troops of North and West Africa proved extremely valuable to the motherland both for labor and in battle. French Africa contributed supplies generously to the Allied war effort, such as wheat, wool, and leather.

France's overseas resources of African mine, farm, and pasture are still significant in a warring world short of many of the basic human requirements of food and clothing. French North Africa particularly, with its somewhat limited but intensively cultivated agricultural and grazing regions, is a heavy producer of grains, vegetables, and many fruits. Its hides, wool, and cotton are valuable for boots, blankets, and uniforms, as well as for the manufacture of depleted civilian supplies.

Oils and Cotton among African Supplies

Algeria, Morocco, and Tunisia all have mineral resources, increasingly developed, including phosphates, iron, coal, lead, zinc, and petroleum.

French West Africa, stretching from the north-central portion of the continent to the Atlantic, is less productive than North Africa, partly because of its wide stretches of rocky desert. Yet its more fertile areas provide such important supplies as rice, corn, millet, vegetable oils, cotton, and gum.

Equally important in any summary of the potential value of French possessions in Africa's bulge is the location of the territories and their leading ports, in addition to Dakar.

Algeria, together with a tiny strip of Morocco, occupies a west Mediterranean

UMI

Philip Gendreau

SHIPS SAIL ACROSS A MOUNTAIN RANGE WHERE THE GAILLARD CUT TAKES THE PANAMA CANAL OVER THE CONTINENTAL DIVIDE

From sea level up to 85 feet and down on the other side is the mountain-climbing feat performed by ships transiting the Panama Canal. When the Canal was built, the highest point on the route chosen was Culebra Pass, 277 feet above sea level. Digging and blasting a trench through the Culebra Pass for the great inter-ocean waterway was an almost superhuman feat that finally cost the life of the U. S. Army engineer in charge, Col. David DuBose Gaillard; in his memory the 9-mile corridor through the Divide was named Gaillard Cut. Sixty million pounds of dynamite were used to blast through 16 miles of rock for this cut; the cost was some $15,000,000 a mile (Bulletin No. 2).

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Pirate-Fighting Panama Strengthens Defenses

NEVER before in the 400 years of its recorded history has Panama been the scene of such intensive military precautions as those now being taken by Uncle Sam for protection of the Canal. Today, instead of English pirates or Spanish conquistadors, who in the 16th and 17th centuries brought bloodshed and pillage to this narrow neck of land connecting two continents, the Canal is guarding against Axis submarines and airplanes.

Nearly 300 years ago the Indians defended Panama with the "scorched earth" policy so commonly reported in World War II. When Sir Henry Morgan, English buccaneer, invaded the Isthmus in 1671, he carried no provisions for his men, planning to loot villages along the way. The Indians, however, disappeared into the jungle, leaving their fields in ruins.

Coast-to-Coast Highway on Isthmus

In striking contrast to the old Gold Trail, or Camino Real of Spanish conquistadors, is the new 20-foot-wide concrete-surfaced highway even now passable for Army use from coast to coast.

The line of forts which the U. S. Army maintains along the Canal has been strengthened; suspected saboteurs have been shipped out of the Canal Zone; and the rules for transit of the Canal are more rigidly enforced than ever.

These rules forbid any vessel to pass through the locks under her own power; she is towed through by electric engines. At the entrance the engines are sealed and locked, and a Canal pilot comes aboard, along with a detachment of sailors and soldiers. The ship's captain becomes a mere passenger.

Pay as You Enter

As the Canal is not a strait of the high seas, transit is a privilege which may be granted or withheld; the Canal is exclusively under U. S. jurisdiction under the control of the War Department. The cost of transit is the same to American or foreign ships, and the rule is "pay as you enter." Charges are based on net tonnage, the average being about $4,500. The lowest toll was the 75¢ levied on a 16-foot canoe sailed down from California. Tolls were $21,177,243.04 during 1940, considerably less than the 1929 high of $27,000,000. From the opening of the Canal in 1914, through June, 1940, tolls have brought the U. S. Treasury $474,341,988.20.

Transit usually takes about 8 hours, but in 1934, 134 U. S. Navy vessels passed through in 41 hours. Transit begins at 6 a.m., and a ship is started from each terminus every half-hour thereafter until mid-afternoon. The locks operate as late at night as is necessary to clear all ships admitted. Only in case of accident or emergency may a ship remain in the Canal overnight.

After leaving Cristobal, at the Caribbean entrance, a Pacific-bound ship enters the first of the Canal's sets of locks at Gatún. From a distance, these locks—three sets of two locks each—look like giant stair steps, but at close range they resemble the walls of tall buildings. After the lock gates close, the ship rises about three feet a minute. The third "step" takes her into Gatún Lake.

This artificial lake was the largest made by man until the completion of Boulder Dam. It was formed by damming the Chagres River, enclosing 164 square miles within its irregular shores. Islands in the lake, once mountain peaks,

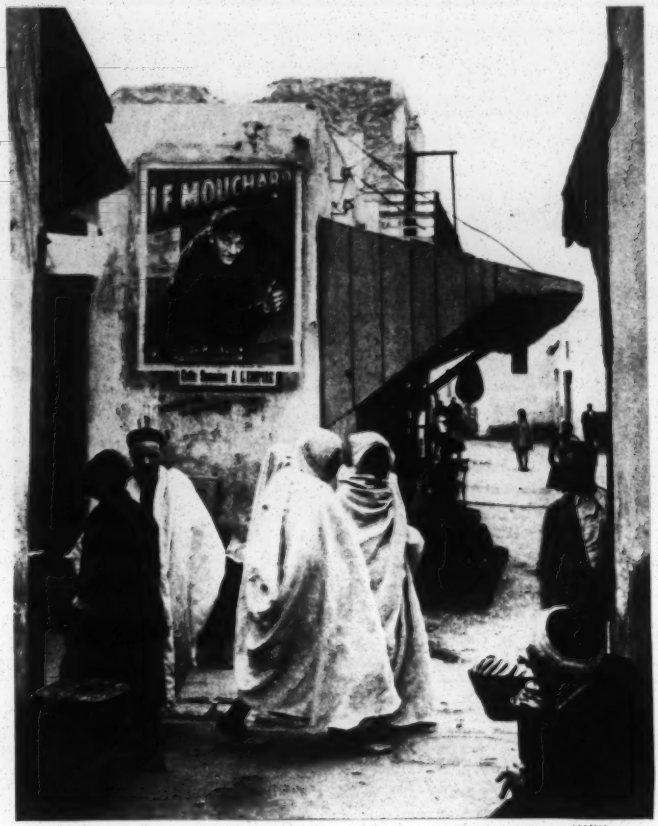
coastline of well over a thousand miles, extending from a point opposite southeast Spain to a position just south of Italian Sardinia. Tunisia, with its once powerful naval and air base of Bizerte, overlooks the narrows of the Mediterranean across from Sardinia and Sicily.

Casablanca, Morocco, is another French station on the Atlantic, less vital than Dakar. An excellent artificial port, situated within a few hundred miles of Gibraltar, this city lies on normally busy sea and air routes to Western Europe and the Mediterranean.

Note: For further information on French Northwest Africa, see the recent article in the *National Geographic Magazine*, March, 1942: "French West Africa in Wartime."

French territories in Africa are shown on the National Geographic Society's Map of Africa. A price list of maps may be obtained from the Society's headquarters in Washington, D. C.

Bulletin No. 1, May 4, 1942.



Maynard Owen Williams

AMERICAN MOVIES SPEAK FRENCH TO AFRICAN COLONIES

In her colonies in Africa, France has permitted religious freedom, with the result that the majority of the inhabitants retain their Moslem faith and the numerous everyday customs which are inseparable from it. In white burnooses and flapping slippers the Moslem desert dwellers come to town. In the city of Sfax (above) they can visit the Great Mosque with its unchanging ritual and later attend fairly recent motion pictures. The American-made movie, "The Informer," provided in Paris with "dubbed-in" French dialogue, appeared in Sfax as "Le Mouchard." Sfax is the second-largest city of Tunisia, France's easternmost colony in North Africa.

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The ABC's of Vitamins for Victory

FOR better health, the United States literally is learning to eat its way through its ABC's, by way of vitamins. Those minute elements in food—vitamins—so essential to general well-being, are the victory weapons of the nation's cooks.

The more familiar vitamins—A, B, C, D, E, and K—are only a part of the 18 or more known vitamins classed among the 30 or 40 requirements for nutrition.

Today, war work has increased the demand for energy and the need for good health. With the transfer of thousands of doctors from civilian practice to military duty, the nation, of necessity, has become more health-conscious and vitamin-wise. The housewife, the chef, and the dietician prepare meals with an eye toward vitamin content. They buy food for vitamins to prevent, rather than pills to cure.

Bakers, cooperating with the Government's nutrition program, are fortifying approximately half of the nation's white bread by adding vitamin B_1, niacin, and iron, which are normally lost from flour in milling. Since 15 billion loaves of bread come out of the ovens of the U. S. each year and 97 per cent of the bread eaters still choose white bread, this will be one of the most easily available sources of vitamin B. Oleomargarine, a butter substitute, is being fortified with vitamin A. Milk is being irradiated to increase the vitamin D content, and numerous other food products are also vitamin-strengthened.

Vitamins Named for "Life" by Polish Chemist 30 Years Ago

In 1881 a pioneer scientist, exploring the mysteries of nutrition, blended the elements found in milk and fed the substance experimentally to animals. When the animals failed to thrive, he concluded that real milk contained small quantities of some unknown substances not present in the artificial diet.

Casimir Funk, a Polish chemist, while trying in 1912 to identify these substances, called them "vitamines"—vita from the Latin for "life," and amine from a certain nitrogenous element he thought present. The "e" was later dropped.

By feeding or denying test foods to laboratory animals, it was gradually established that some foods contained elements necessary to health which others lacked. As the vitamins were discovered, they were designated alphabetically:

VITAMIN A: As early as 1500 B. C. Egyptians and Chinese ate liver to improve their vision, but the presence of vitamin A in liver only recently has been established as the agent responsible for alleviating night blindness and poor vision. A fat-soluble vitamin, this is not easily destroyed by cooking and can be stored in the body for a considerable time. At least 90 per cent of the vitamin A in the body is stored in the liver.

Found in: deep-green leafy vegetables, such as spinach, broccoli, and watercress; bright yellow-orange foods, such as carrots, sweet potatoes, oranges; tomatoes; milk, cream, and butter; and in liver and other glandular meats.

Essential for: good eyesight.

VITAMIN B_1 (THIAMINE): This is a water-soluble vitamin not stored in the body for any length of time. It is destroyed by prolonged cooking. (Water

This BULLETIN supplies information for use with Unit I (II, G, 4. Taking courses—nutrition, first aid, etc.), in the U. S. Office of Education handbook, "What the War Means to Us." A limited number of additional copies of this BULLETIN can be supplied.

vary in size from a spot of foliage to the 6-square-mile island of Barro Colorado, which is a wild-life preserve. Accredited scientists may stay as long as they wish in its pleasant screened cottages. Monkeys swing in the tops of palms and cedars; orchids grow in great variety. Ocelots and collared peccaries are only a few of the animals which roam free, in no danger greater than that of being shot with cameras.

Gaillard Cut, the Water Path from Lake to Lake

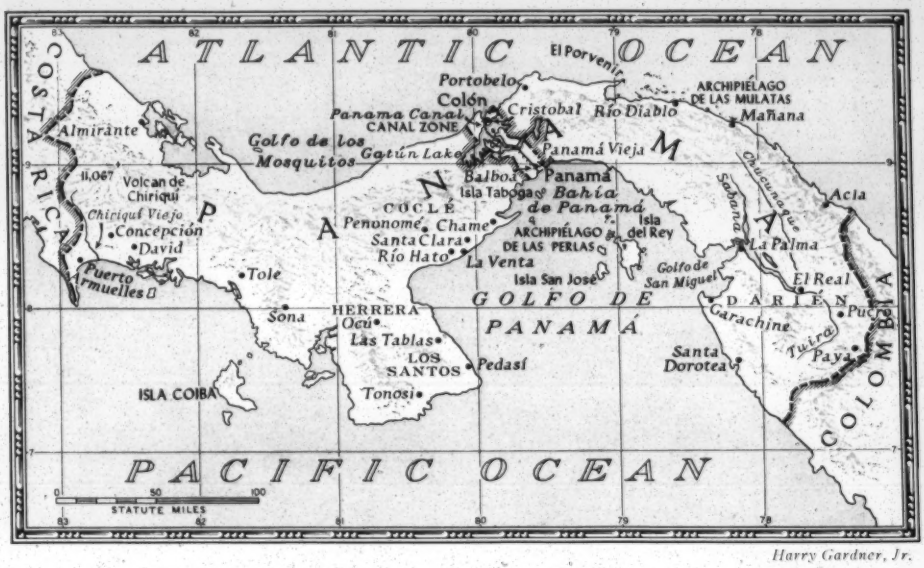
Beyond Barro Colorado the channel enters Gamboa Reach, where for 8 miles the banks rise higher and higher; then the ship enters the 9-mile Gaillard Cut (illustration, inside cover). Beyond the Cut one double lock at Pedro Miguel lowers the ship to the 54-foot level of Miraflores Lake. At the end of this 1½-mile lake are the two double Miraflores locks which lower to the level of the Pacific, at Balboa. Beside the little fortified islands of Naos, Perico, and Flamenco, the ship reaches the open sea, having traveled 50 statute miles from deep water to deep water. It is only 34 miles by air.

The U. S. Congress in 1940 authorized a third set of locks, to be built at some distance from the original ones. When completed they will minimize the danger of enemy action putting the Canal out of commission.

Note: For additional information on Panama and the Canal, see the illustrated article in the *National Geographic Magazine*, November, 1941: "Panama, Bridge of the World," and in the GEOGRAPHIC SCHOOL BULLETINS: "Panama, a Pivot of the Americas," November 3, 1941.

The Panama Canal is shown in a special inset on the National Geographic Society's Map of Mexico, Central America, and the West Indies.

Bulletin No. 2, May 4, 1942.



Harry Gardner, Jr.

PANAMA'S WATER BRIDGE FINDS THE ATLANTIC WEST OF THE PACIFIC

Because the Isthmus of Panama lies like a letter S between the Atlantic and the Pacific Oceans, the entrance on the Atlantic side is 27 miles west of the "western" exit on the Pacific. Panama, the city which has had nearly 3 centuries of importance as Pacific terminus of trans-isthmian routes, was built by the survivors of Old Panama, which the pirate Morgan had sacked in 1671, on a rocky peninsula a few miles west of the old city. Colón, at the Atlantic end, is a child by comparison, having been founded when the Panama Railroad was started in 1850. It never really achieved maturity until a series of fires, and a health crusade by General Gorgas during the construction of the Canal, transformed it into a healthful and orderly seaport.

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Strategic Materials (No. 11): Manganese by the Spoonful for Steel

ONE of the first two towns in India to be bombed by the Japanese was Vizagapatam on the Bay of Bengal, the shipping point for India's coveted exports of manganese. This remote port of unfamiliar name sends to the U. S. in normal times enough manganese to rank India second among our foreign supply sources.

Foremost among the metals for which America most urgently shops abroad, manganese is such a powerful tonic for steel that one-tenth of an ounce, a mere pinch, is administered to practically every pound of steel now manufactured. The world's record output of steel in the U. S. last year would not have been possible without it. Virtually every steel product from armored tanks and battleships to airplane gears would be slower in building, less lasting, and more costly. Moreover, manganese is one of the metals that keep dry-cell batteries on the job.

Japan's need for manganese joins the thirst for oil and hunger for rubber as an added motive of conquest in Asia. Philippine manganese mines on the island of Luzon had Japan as their best customer as lately as 1939.

Mountain Town of the Caucasus Sends U. S. Russian Manganese

Sixteen states in the United States produce manganese, but altogether have supplied only 4 to 10 per cent of the country's needs. Montana, Tennessee, and Arkansas were the only quantity producers. The U. S. imports on the average about 95 per cent of its manganese.

Johan Gahn, a Swedish iron miner of the 18th century, turned chemist to isolate the first pure manganese. Called "black magnesia," its ore had served glass makers, and ancient Egyptians had used it for glazing purple pottery.

Manganese-miner-in-chief on the world scale is the U. S. S. R., the only nation with a large steel industry and enough manganese to supply it. The chief source of supply to the U. S. in recent years has generally been Russia, where ores were shipped from the Black Sea ports of Poti and Batum. These far-travelled ores originated in the steep cliffs of southwestern spurs of the Caucasus Mountains, around the town of Chiaturi less than 100 miles inland from Poti. Miners with pick and shovel hacked the dark manganese from seams along the cliffsides, and pack mules carried it down slippery mountain trails to the valley railway. Russian ores before the war supplied about one-third of U. S. imports.

India, ordinarily the world's second-largest producer, has mined the metal for a little over 40 years chiefly on the uplands of the Deccan.

This BULLETIN supplies information for use with the U. S. Office of Education handbook, "What the War Means to Us"; Unit IV, Section II, We gear our industries to war needs.

Strategic materials, so essential to industry's war effort, were defined by the Army and Navy Munitions Board as those defense materials for which the United States must depend to a large extent on foreign sources.

The GEOGRAPHIC SCHOOL BULLETINS have been presenting a series of articles on these materials, their use, their peculiar qualities, and the countries from which they are obtained. The following have already been described:

Antimony (No. 9)	Mercury (No. 5)	Quinine (No. 2)
Chromium (No. 7)	Mica (No. 6)	Silk (No. 8)
Coconut Shell Char (No. 10)	Nickel (No. 1)	Tungsten (No. 3)
Manila Fiber (No. 4)		

UMI

in which vegetables are cooked should be saved for the B_1 and mineral content.) Approximately 1 ton of rice polishings will produce 1/6 of an ounce of vitamin B_1. An amount weighing no more than a small printer's comma is sufficient to ward off beri-beri, the Asiatic disease of the nerves similar to neuritis.

Found in: pork; milk; peas, beans, and other legumes; enriched bread or whole grain cereals; nuts; eggs; and most meats.

Essential for: growth, good appetite, good nerves.

VITAMIN B_2 (RIBOFLAVIN): Although its real significance was not known until five or six years ago, its presence was discovered in milk more than 60 years ago.

Found in: milk, eggs, and butter; almost all vegetables and fruit; fowl, in greater amounts in dark meat than in light meat.

Essential for: growth, healthy skin, proper functioning of the eyes.

VITAMIN C: More than 45 years ago, scurvy was experimentally developed in guinea pigs by depriving them of vitamin C. Ten years later the same disease among sailors was recognized as due to a diet deficient in vitamin C; the addition to their diets of cabbage and other green foods, and especially of vitamin C-rich orange and lemon juice, resulted in almost miraculous cures. The food element responsible for their cure, however, was not given the name of vitamin C until some 25 years later. Water-soluble, it is lost by cooking with soda, prolonged cooking, or long exposure to air.

Found in: fruits, especially citrus fruits; tomatoes and other vegetables such as cabbage and onions.

Essential for: development of teeth, bones, and blood.

VITAMIN D (THE SUNSHINE VITAMIN): When their children were suffering from diseases now known to be due to a lack of calcium, the Chinese used to feed them "Dragon's Bones," the fossilized bones of dinosaurs found in the Gobi Desert. Now it is known that vitamin D must be present for the body to assimilate calcium and phosphorus for bones and teeth.

Found in: sunlight; fish liver oil; liver; eggs; irradiated milk.

Essential for: proper formation of bones and teeth.

VITAMIN E: found in: the seed oils and leafy vegetables.

Essential for: functioning of the pituitary and thyroid glands, which affect growth and nerves.

VITAMIN K: This is known as the "stop-hemorrhage" vitamin, because it is necessary to make the blood clot normally and thus to prevent excessive bleeding. It is present in great quantities in alfalfa.

Found in: deep-green leafy vegetables; soybean oil; rice bran; cereals.

Essential for: normal clotting of the blood.

NIACIN (NICOTINIC ACID): As many as 400,000 cases of pellagra have been reported in the U. S. each year, mainly in the southern States. If left untreated, this disease is likely to result in insanity. It is believed to originate in dietary deficiencies, occurring most frequently in poverty-stricken areas. Pellagra may be prevented and in many cases cured by a diet which includes this vitamin.

Found in: fish; the vegetables, meats, and fruits containing vitamin B.

Essential for: prevention of pellagra.

Some of the vitamins to which letters were at first assigned turned out to be incompletely identified. Vitamin B, for example, turned out to be a complex group of factors rather than a single element, including nicotinic acid, pyridoxine (vitamin B_6), and pantothenic acid. The more newly recognized vitamins are now being named instead of lettered. Pyridoxine, pantothenic acid, and biotin (also part of the B complex) choline, para-amino benzoic acid, inositol, chondroitin, norite eluate factor, and folic acid, together with two factors so far found beneficial only to dogs—alkali-labile and alkali-stable—all fit into the ever-growing vitamin pattern.

Note: For further information on food and vitamins, see the illustrated article in the *National Geographic Magazine*, March, 1942: "Revolution in Eating;" and also in the GEOGRAPHIC SCHOOL BULLETINS: "Peanuts Volunteer for Front-Line Duty," April 27, 1942.

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Geo-Graphic Brevities

JAPAN'S PRISON ISLAND FOR AMERICANS

SHIKOKU ISLAND, where Japan has interned several hundred U. S. war prisoners, is one of the four principal islands of Japan proper. Its area almost equals that of New Jersey. It has a population of about 4,000,000 people.

Shikoku means "four lands," referring to the four provinces into which the island was formerly divided.

Narrow seas separate Shikoku from the southwest corner of Honshu (Main Island) and the important Japanese naval base of Kure. The town of Zentsuji, in which the Americans are reported held, is about 70 air miles southeast of Kure, across the Sea of Bingo.

The city formerly was the headquarters of Japan's 11th Army Division. A typical Japanese town of small wooden houses and gabled roofs, it sprawls at the foot of high mountains whose cone-shaped outlines form a background familiar in Japanese landscapes.

Zentsuji is sacred to the Japanese as the birthplace of Kōbō Daishi, founder of a Buddhist sect. The Zentsuji temple, tradition says, was built by the religious leader in 709 and restored nearly a thousand years later. Camphor trees in the temple garden, the Japanese say, were there before the original temple.

Like most of volcanic Japan, Shikoku Island is mountainous. Its thick forests of beech, oak, maple, ash, camphor, and evergreens support a considerable paper and lumber industry. Long-worked deposits of copper and antimony provide Japanese industry with war materials. Shikoku also produces tobacco, indigo, and rice—in some places, two crops of rice a year. In the northern coast's miles of salt pits, salt is extracted from the sea.

* * * * *

INDIA IS NON-BRITISH IN NINE SPOTS

CONTRARY to general belief, India is not entirely under British protection. There are nine colonial holdings of Portugal, France, and Oman in the Indian peninsula, so tiny and scattered that their existence is often overlooked.

The area under the flag of Oman, a sultanate at the southeast corner of the Arabian Peninsula, is the port of Gwadar on Baluchistan's coast.

Portuguese India is centered in Gôa, 300 miles south of Bombay on the Arabian Sea coast, the size of Rhode Island and almost as populous. All within the limits of Bombay Province, Portuguese territory includes Damão and Diu, smaller parcels on opposite shores of the broad entrance to the Gulf of Cambay north of Bombay. New Gôa (Pangim), capital of the settlement, is a modern port.

In the early 16th century when, after conquests by Vasco da Gama and Albuquerque, Portugal's glory spread from Africa to China, Gôa was important in trade between the Orient and Europe, famous especially for its horses. Today its commerce, mostly transient from surrounding British districts, is small, limited to exports of salt, coconuts, fish, and spices.

French India, under the Free-French leadership of General de Gaulle since 1940, consists of five little scattered settlements whose total area would about blanket Philadelphia. They are Mahé, south of Gôa on the Malabar Coast; Karikal and Pondichéry, below Madras on the Bay of Bengal coast; Yanaon, 300

UMI

Africa is almost as rich as Asia in manganese. The steaming tropical Gold Coast on the Atlantic has open pit mines that pour ore out through the port of Takoradi. A British soldier settling in the Union of South Africa after the World War found that chunks of manganese could be picked up from the ground over an area almost 50 miles long. Exported through Durban on the Indian Ocean, the South African ores found Germany their best customer before the war.

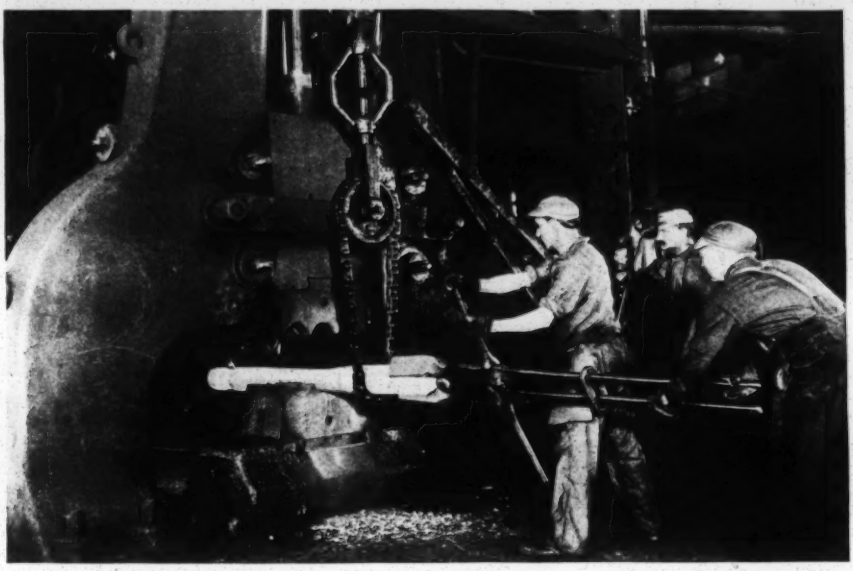
Of the Western Hemisphere's manganese resources, Brazil has the largest, chiefly in Minas Geraes. Cuba's Oriente Province has manganese workings which have supplied as much as one-fourth of U. S. imports. In 1941, Uncle Sam also added a little to his manganese stocks from Bolivia, Chile, Mexico, and Peru.

This vital dose of alloy enters steel usually as ferromanganese, a half-and-half mixture with iron, or as spiegeleisen, a lower-grade mixture about one-fifth manganese, named from the German for "mirror iron," because of its shiny facets.

Its basic use is to cleanse molten steel of oxygen bubbles, which would make it brittle and spongy, and of traces of sulphur, which would make steel subject to cracking while being processed.

But manganese is a metal of many quirks. While performing its scavenging duties, it confers upon steel a toughness that gives extra wearing qualities to such hard working machine parts as axles, railroad and street car rails, rock crushers, rifle barrels, and steam shovels. World War U. S. Army helmets, thanks to manganese and other alloys, were tough enough to turn aside a pistol bullet fired 10 feet away. Mixed with bronze, manganese produces a sturdy non-rusting material for ship propellers, gears of gun carriages, and other exposed parts.

Note: For further information on metals, see "Metal Sinews of Strength" in the *National Geographic Magazine* for April, 1942.



12½ POUNDS OF MANGANESE MAKES A TON OF STEEL STRONGER

The bit of manganese used to alloy steel, 12½ pounds per net ton or 14 pounds per gross ton, about ½ of 1 per cent, gives that metal an increased tensile strength of 1,500 to 2,000 pounds per square inch. It strengthens steel at a lower cost than other alloys, such as nickel, chromium, or tungsten. Manganese steel is too hard to be machined, and must be forged into its final shape by a massive drop-forge. The upper element of the forge, in the photograph, is pounding the hot steel on the anvil slowly into the shape of an axle. When alloyed with manganese, steel axles, gears, railroad switches, and other items of the Machine Age's workaday world grow harder with each knock, bang, jolt, or battering they receive.

miles up the coast from Madras; and Chandernagor, north of Calcutta on the Hooghly River. Pondichéry is their seat of government.

French and Indian Wars in American history had their counterpart on the other side of the world at the same time, with much the same outcome, when French merchants were establishing coastal bases in India. Pondichéry, the oldest, between 1674 and 1814 was in French hands five times, Dutch once, and English three times, finally becoming French by treaty. Today this picturesque city of 51,000 is an outstanding example of French civilization abroad.

* * * * *

CEBU, SECOND CITY OF THE PHILIPPINES

AFTER the fall of Bataan, Cebu, second largest city of the Philippine Islands, was the object of Japanese attack. This venerable city was a village when Magellan in 1521 discovered Cebu Island. Magellan met his death in battle that year while allied with the natives of Cebu in an attack on the small neighboring island of Mactan. A Spanish settlement established there in 1565 made Cebu the capital of the Philippines for fifty years.

In recent times Cebu has been second to Manila in industrial importance as well as in size. Close to the geographic center of the Philippines, about 300 miles southeast of Manila, it is the metropolis of the central group of islands known as the Visayans. Export of tobacco, sugar, copra, and Manila or abacá fiber (so-called "Manila hemp," best of the rope-making fibers) from near-by plantations has caused Cebu to double in population since 1920 to a 1940 total of about 145,000. An important industry is the weaving of sacks for the Philippines' extensive sugar exports.

The good harbor at Cebu is protected from violent winds by the island of Mactan.

Bulletin No. 5, May 4, 1942.

Cowling from Galloway

THE ZEBU EXPRESS CAN CARRY ALL OF GÔA'S COMMERCE NOW

Four centuries ago this Portuguese patch on the many-colored coast of India's geography was an important way-station on Portuguese-dominated sea lanes between Europe and the Orient. With the fall of the Portuguese Empire, however, Gôa also declined in importance. While great ports of world importance flourish around it, and in spite of much modernization, some of Gôa's commerce comes to the port at a leisurely pace in carts drawn by long-horned zebus. Sailing ships for coastal trading are more numerous in the harbor than seagoing vessels. The building of roads through the small Portuguese territory in recent years has helped improve the standard of living of the whole colony.

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